

CLAIMS

1. A waterproof and breathable sole for shoes having a structure that is characterized in that it comprises:

-- a supporting layer (10, 110) which, at least in a preset macroportion
5 (11, 111), is made of net, felt or other diffusely perforated material;

-- a membrane (13, 113) that is made of a material that is impermeable to water and permeable to water vapor and is associated above said supporting layer (10, 110) at least in said at least one preset macroportion (11, 111) made of net, felt or other diffusely perforated material, which it covers;

10 -- a tread (15, 115) made of plastic material, with at least one through macroperforation (16, 116) at said at least one preset macroportion (11, 111) made of net, felt or other diffusely perforated material,

said tread (15, 115) being joined hermetically to said membrane (13, 113) and to said supporting layer (10, 110) at least at the perimeter of said at least
15 one macroportion (11, 111) made of net, felt or other diffusely perforated material.

2. The sole according to claim 1, characterized in that said supporting layer (10, 110), in the portions that are distinct with respect to said at least one preset macroportion (11, 111) made of net, felt or other diffusely
20 perforated material, is constituted by a fine mesh, leather or other similar materials.

3. The sole according to claim 1, characterized in that said membrane (13, 113) made of waterproof and vapor-permeable material is laminated together with a fine mesh (14, 114) for supporting it, which lies above it and is made
25 of synthetic material.

4. The sole according to claim 1, characterized in that said membrane (13, 113) is coupled by means of spots of glue to said supporting layer (10, 110) in the contact regions.

5. The sole according to claim 1, characterized in that said supporting
30 layer (110) is entirely made of mesh, felt or other diffusely perforated

material that constitutes a single large macroportion (111) that is covered in an upward region by said membrane (113) and said tread (115) made of plastic material is assembled to said supporting layer (110) and joined hermetically to said membrane (113) at least at its peripheral region.

5 6. The sole according to claim 5, characterized in that said tread has substantially one single large through macroperforation (116) that affects substantially all of the sole of the foot except for the perimeter (115a), said macroperforation (116) being delimited by protrusions (115b) that form, together with the perimeter (115a), the ground contact surface.

10 7. The sole according to one or more of the preceding claims, characterized in that said tread (15, 115) is injected directly into a mold onto said supporting layer (10, 110) with at least perimetric penetration through the meshes of said net or of the felt, which is perimetrically reduced in thickness, is perforated perimetrically or bordered with net, so as to reach
15 and join hermetically said membrane (13, 113).

8. The sole according to one or more of claims 1 to 6, characterized in that a perimetric layer (17) of glue is spread onto said supporting layer (10) so as to penetrate through the meshes of the net or the felt and join monolithically and hermetically the lower tread (15) and the upper
20 membrane (13).

9. The sole according to one or more of claims 1 to 6, characterized in that a film (18) made of PVC or PU is arranged either between the supporting layer (10) and the membrane (13) or between the tread (15) and the supporting layer (10), with high-frequency welding performed so as to
25 melt the film (18) and make it penetrate between the meshes of the net or felt, so as to join the components monolithically.

10. The sole according to one or more of claims 1 to 6, characterized in that a film (18) made of PVC or PU is arranged between said layer (10) and said membrane (13) by means of high-frequency welding and the assembly
30 is then glued to said tread (15).

11. A shoe with a sole according to one or more of the preceding claims, characterized in that it comprises an upper (120) that is assembled to an assembly insole (124) and is coupled to said sole at the peripheral region of said insole.

5 12. The shoe according to claim 11, characterized in that the coupling between said assembly insole (124), said upper (120) and said sole is provided by gluing or high-frequency welding.

13. The shoe according to one or more of claims 11 and 12, characterized in that said assembly insole is coupled in a downward region with respect to
10 a filler layer (122) made of a material such as diffusely perforated EVA, coconut fibers, et cetera.

14. The shoe according to one or more of claims 11 to 13, characterized in that an inner sole (119) made of breathable or diffusely perforated material is arranged above said assembly insole (124).

15 15. The shoe according to claim 14, characterized in that said insole (119) is coupled, in a downward region, to a layer (119a) made of polyethylene or the like that is diffusely perforated and contoured anatomically.

16. A shoe having a sole that comprises:

- 20 -- a supporting layer (110), which is made of net, felt or other diffusely perforated material at least in a preset macroportion (111);
- a membrane (113), which is made of a material that is impermeable to water and vapor-permeable and is associated in an upward region with said supporting layer (110) at least in said at least one preset macroportion (111) made of net, felt or other diffusely perforated material, which it covers;
- 25 -- a tread (115), which is made of plastic material with at least one through macroperforation (116) at said at least one preset macroportion (111) made of mesh, felt or other diffusely perforated material,

said shoe being characterized in that it comprises an upper (120) that is assembled on an assembly insole (124) that is coupled in a downward region
30 with respect to a layer (122) made of a material such as diffusely perforated

EVA or the like, which constitutes the means for the hermetic high-frequency welding of said membrane (113) to said upper (120) from above, perimetrically with respect to said macroportion (111), said tread (115) being glued perimetrically to the assembly.